

What is claimed is:

- 1 1. An image display apparatus comprising:  
2 a pixel electrode;  
3 a common electrode;  
4 a switching element to control supply of an electric potential to the pixel  
5 electrode; and  
6 an auxiliary electrode forming an auxiliary capacitance between a portion of the  
7 auxiliary electrode and a portion of the pixel electrode,  
8 the common electrode adapted to be set at a first electric potential, and  
9 the auxiliary electrode adapted to be set at a second, different electric potential.
- 1 2. The image display apparatus of claim 1, comprising an in-plane switching image  
2 display apparatus.
- 1 3. The image display apparatus of claim 1, further comprising:  
2 a first electric potential supplying section to supply the first electric potential to  
3 the electrode; and  
4 a second electric potential supplying section to supply the second electric  
5 potential to the auxiliary electrode.
- 1 4. The image display apparatus of claim 1, wherein an electric field is generated  
2 between the pixel electrode and common electrode in response to application of the  
3 electric potential to the pixel electrode by the switching element.
- 1 5. The image display apparatus of claim 4, further comprising an array substrate,  
2 wherein the pixel electrode, common electrode, switching element, and auxiliary  
3 electrode are formed on the array substrate,  
4 the electric field being generally parallel to a surface of the array substrate.

1 6. The image display apparatus of claim 1, wherein the switching element comprises  
2 a thin film transistor.

1 7. The image display apparatus of claim 1, further comprising:  
2 a signal line, the switching element connected between the signal line and the  
3 pixel electrode; and  
4 a scanning line to turn the switching element on or off.

1 8. The image display apparatus of claim 7, wherein the pixel electrode and common  
2 electrode are associated with a first display pixel, the image display apparatus further  
3 comprising,  
4 additional pixel electrodes and common electrodes associated with other display  
5 pixels.

1 9. The image display apparatus of claim 8, wherein the additional pixel electrodes  
2 comprise a second pixel electrode, and the additional common electrodes comprise a  
3 second common electrode,  
4 the image display apparatus further comprising:  
5 a second switching element to control an electric potential supplied to the second  
6 pixel electrode; and  
7 a second auxiliary electrode forming an auxiliary capacitance between a portion  
8 of the second auxiliary electrode and a portion of the second pixel electrode,  
9 wherein the second common electrode is adapted to be set at the first electric  
10 potential, and  
11 wherein the second auxiliary electrode is adapted to be set at the second electric  
12 potential.

1 10. The image display apparatus of claim 1, further comprising:  
2 a signal line, the switching element connected between the signal line and the  
3 pixel electrode;  
4 a scanning line to turn the switching element on or off;

5 a shunt line connected to the common electrode; and  
6 a switching section connected between the scanning line and the shunt line,  
7 the switching section adapted to turn on in response to an elevated voltage on the  
8 scanning line.

1 11. The image display apparatus of claim 1, further comprising a short-circuit  
2 detector to detect a source of a short circuit.

1 12. The image display apparatus of claim 11, wherein the short-circuit detector is  
2 adapted to produce a first current in response to a short circuit at a first source and to  
3 produce a second, different current in response to a short circuit at a second source.

1 13. The image display apparatus of claim 12, wherein the short-circuit detector  
2 comprises switching elements, a first one of the switching elements to turn on in response  
3 to a short circuit at a first location, and a second one of the switching elements to turn on  
4 in response to a short circuit at a second location.

1 14. The image display apparatus of claim 13, wherein at least one of the switching  
2 elements comprises a diode.

1 15. The image display apparatus of claim 1, further comprising:  
2 a signal line, the switching element connected between the signal line and the  
3 pixel electrode,  
4 wherein an absolute value of a difference value between the second electric  
5 potential of the auxiliary electrode and a center electric potential of the signal line is less  
6 than an absolute value of a difference value between the center electric potential of the  
7 signal line and the first electric potential of the common electrode.

1 16. The image display apparatus of claim 15, wherein the center electric potential of  
2 the signal line is a value obtained by taking an average of a maximum value and a  
3 minimum value of the electric potential of the signal line.

1 17. An in-plane switching image display apparatus that comprises an array substrate,  
2 and a pixel electrode and a common electrode corresponding to a display pixel on the  
3 array substrate, the image display apparatus to display an image by controlling the  
4 electric potential of said pixel electrode to produce an electric field parallel to a surface of  
5 said array substrate, said array substrate comprising:

6 a switching element to control the electric potential supplied to said pixel  
7 electrode;

8 an auxiliary electrode that forms an auxiliary capacitance between itself and at  
9 least a part of said pixel electrode;

10 a scanning line to control a drive state of said switching element;

11 a signal line that has a changing electric potential in relation to a prescribed center  
12 electric potential, the signal line to supply the electric potential to said pixel electrode via  
13 said switching element;

14 a common electrode electric potential supplying section to supply an electric  
15 potential different from said center electric potential to said common electrode; and

16 an auxiliary electrode electric potential supplying section to supply an electric  
17 potential to said auxiliary electrode such that an absolute value of a difference value from  
18 said center electric potential of said signal line is smaller than an absolute value of a  
19 difference value between the center electric potential of said signal line and the electric  
20 potential supplied by said common electrode electric potential supplying section.

1 18. An in-plane switching image display apparatus that comprises an array substrate  
2 and a pixel electrode and a common electrode corresponding to a display pixel on the  
3 array substrate, the image display apparatus to display an image by controlling the  
4 electric potential of said pixel electrode to produce an electric field parallel to a surface of  
5 said array substrate, said array substrate comprising:

6 a switching element to control the electric potential supplied to said pixel  
7 electrode;

8 a scanning line to control a drive state of said switching element;

9 a signal line to supply an electric potential via said switching element to said pixel  
10 electrode;

11 a common electrode electric potential supplying section to supply an electric  
12 potential to said common electrode,

13 an auxiliary electrode that forms auxiliary capacitance between itself and at least a  
14 part of said pixel electrode;

15 an auxiliary electrode electric potential supplying section to supply an electric  
16 potential to said auxiliary electrode;

17 a first switching section;

18 a shunt line connected to said scanning line via the first switching section whose  
19 on/off state is controlled based on an electric potential difference between the shunt line  
20 and the scanning line;

21 a second switching section deployed between said common electrode and said  
22 auxiliary electrode that controls a conduction state between said common electrode and  
23 said auxiliary electrode; and

24 a third switching section deployed between said common electrode and said shunt  
25 line that controls the conduction state between said common electrode and said shunt line  
26 and has electrical properties different from those of said second switching section.

1 19. The image display apparatus of claim 18, wherein the electric potential supplied  
2 by said auxiliary electrode potential supplying section is such that an absolute value of a  
3 difference value from said center electric potential of said signal line becomes smaller

4 than an absolute value of a difference value between the center electric potential and the  
5 electric potential supplied by said common electrode electric potential supplying section.

1 20. The image display apparatus of claim 18, wherein said second switching section  
2 and said third switching section share at least some part in common.

1 21. The image display apparatus of claim 19, wherein said second switching section  
2 and said third switching section share at least some part in common.

1 22. The image display apparatus of claim 18, wherein said common electrode electric  
2 potential supplying section and said auxiliary electrode electric potential supplying  
3 section each respectively provides a constant electric potential without time dependent  
4 changes.

1 23. The image display apparatus of claim 22, wherein said switching element  
2 comprises a thin film transistor.

1 24. The image display apparatus of claim 18, wherein said switching element  
2 comprises a thin film transistor.

1 25. The image display apparatus of claim 18, wherein said second switching section  
2 and said third switching section each comprises a thin film transistor whose gate  
3 electrode is short-circuited to one source/drain electrode.

1 26. The image display apparatus of claim 22, wherein said second switching section  
2 and said third switching section each comprises a thin film transistor whose gate  
3 electrode is short-circuited to one source/drain electrode.

1 27. The image display apparatus of claim 23, wherein said second switching section  
2 and said third switching section each comprises a thin film transistor whose gate  
3 electrode is short-circuited to one source/drain electrode.

1 28. The image display apparatus of claim 18, further comprising an opposite substrate  
2 that is deployed opposite to said array substrate and a liquid crystal layer encapsulated  
3 between said array substrate and said opposite substrate.

1 29. The image display apparatus of claim 22, further comprising an opposite substrate  
2 that is deployed opposite to said array substrate and a liquid crystal layer encapsulated  
3 between said array substrate and said opposite substrate.

1 30. The image display apparatus of claim 23, further comprising an opposite substrate  
2 that is deployed opposite to said array substrate and a liquid crystal layer encapsulated  
3 between said array substrate and said opposite substrate.

1 31. The image display apparatus of claim 25, further comprising an opposite substrate  
2 that is deployed opposite to said array substrate and a liquid crystal layer encapsulated  
3 between said array substrate and said opposite substrate.

1 32. The image display apparatus of claim 28, further comprising a backlight source  
2 that provides light that penetrates through the inside of said liquid crystal layer.

1 33. A method for use with an image display apparatus having a pixel electrode, a  
2 common electrode, and an auxiliary electrode forming an auxiliary capacitance between a  
3 portion of the auxiliary electrode and a portion of the pixel electrode, the method  
4 comprising:

5 controlling supply of an electric potential to the pixel electrode with a switching  
6 element;

7 setting the common electrode at a first electric potential; and

8 setting the auxiliary electrode at a second, different electric potential.

1 34. The method of claim 33, wherein setting the common electrode at a first electric  
2 potential is performed by a first electric potential supplying section, and  
3 setting the auxiliary electrode at the second electric potential is performed by a  
4 second electric potential supplying section.

1 35. The method of claim 33, further comprising generating an electric field between  
2 the pixel electrode and common electrode in response to application of the electric  
3 potential to the pixel electrode by the switching element.